

MISCELLANEOUS.

Observations on the Structure of the Retina in certain Animals.

By H. MÜLLER.

I HAVE shown in my work upon the Retina, that this part furnishes microscopic characters which may be employed in the systematic distribution of vertebrated animals, to such an extent, that it is often possible to determine the class, the order, and even the genus of an animal from a small fragment of its retina.

In general the more marked the systematic characters are in the different divisions of a class of Vertebrata, the more do we observe variations in the microscopic characters of the retina. The retina of the Sturgeon presents one of the most remarkable examples of this. In a recent examination I found that the layer of batons in this fish is constituted in accordance with a type foreign to the other Fishes, a type which occurs moreover in the class of Birds. There are two elements, the cones and the batons. The latter are truncated externally, whilst the internal part passes into a conical point. The fatty drops, which have been mentioned by other observers, do not belong to the batons but to the cones, which I had formerly suspected, and as may be seen in my work above referred to. The cones are composed of an internal thicker, and an external thinner part, as in Birds. At the extremity of the former part is the fatty drop, which, except in its less brilliant colour, exactly resembles those which are found in the cones of Birds. We do not at present know any other Fish, of which the retina exhibits this arrangement of cones and batons, exactly similar to that of Birds. But on the one hand it is very remarkable that this type of the retina, proper to Birds, also occurs in certain Reptiles, namely the Tortoises, which, themselves, in this respect differ widely from the other sections of the Reptiles. On the other hand, I may remark, that, amongst Fishes, it is exactly in the orders which also possess the most peculiar characters, that we find the most distinct variations in the elements of the retina. In the Sturgeons the layer of cones and batons is constituted in accordance with the type of Birds; in the Cyclostoma, as appears from my previous researches, there are only simple cones, without batons; in the Plagiostoma, on the contrary, I have only found batons and no cones. In the class of Reptiles, we also find very important differences between the Batrachia, the Sauria, and the Tortoises, whilst in the Birds and Mammalia there is a greater uniformity in the general type of the elements referred to, and only slighter modifications.

Another remarkable point is the presence of nervous fibres with double outlines in the retina in certain animals. It is well known that in the eye of the Rabbit there is a beautiful white radiation especially on the two sides of the entrance of the optic nerve, and many observers have remarked, that fibres are sometimes found elsewhere which contain a kind of medulla. But, besides the Rabbits, there are many animals in which the optic fibres present a medulla with dark outlines, in a very marked degree.

I have found that in the Sturgeon, the optic fibres which extend

in a very elegant manner in the form of a double comb, possess very strong outlines in a great part of the retina. The retina of the Plagiostoma also, both Sharks and Rays, contains fibres of a breadth of as much as 0·01 mill., which exhibit all the characters of the varicose fibres with double outlines which occur in the nervous centres. Lastly, I have observed that in the eyes of many Dogs, the optic nerve is still white at its entrance into the eye, and that it is only in the retina that the nervous fibres become pale and transparent. But the change takes place very soon after the entrance of the optic nerve, whilst in the fishes just mentioned, the fibres with double outlines extend over a great part of the retina, and only pass by degrees to the aspect of the pale fibres. In a physiological point of view it is remarkable that in the Fishes of which I am speaking, notwithstanding the double outlines of the nervous fibres, the retina appears to be tolerably transparent during life, whilst in the Rabbits and Dogs it is opaque and white, in the whole extent of the fibres with double outlines. In the former case the influence upon the sight does not appear to be important, but in the latter the perception of light must be hindered or disturbed as far as this peculiarity of the fibres extends; and the ophthalmoscopic effect of the bottom of the eye, and especially of the entrance of the optic nerve, must present remarkable modifications in all the animals in which a state similar to that which has long been known in the Rabbit exists.—*Comptes Rendus*, Oct. 20, 1856, p. 743.

Remarks on Nika edulis, Risso. By WILLIAM THOMPSON.

The possession of a healthy specimen of *Nika edulis* has enabled me to offer the following remarks, which, I trust, may add something new to what is already known of this species.

The first specimen I obtained by dredging on the 2nd July, 1853. I find by my notes, which were made at the time, that it was a female, and in spawn; the ova were darkish green, the animal itself was of a cream colour, and spotted with red dots; the spots were of different sizes, perfectly round, and rather thickly and regularly placed. This specimen was dead before I examined it, and this will account for the difference of colour as contrasted with the specimen, the more immediate subject of the present paper. I had previously obtained one specimen, and a third specimen, also in spawn, was brought to me on the 20th July, 1855; the ova were bright green, and the animal of a cream colour. This specimen was dead when examined.

The subject of the present paper was brought to me alive by my dredger on the 21st February in this year, and lived three weeks. It was dredged in Weymouth Bay, near the mouth of the harbour. The colour in this living specimen was very different from that of the dead specimens I had previously obtained. When first brought to me, the whole animal was a light greenish-drab, irregularly and thinly sprinkled with pure white stars; the carapace and covering of the abdomen were alike transparent, and the intestines could be easily